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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,780

04/28/2006

Hideo Nagai

50478-1900

6109

52044

7590

08/13/2009

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EXAMINER

MONTALVO, EVA Y

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

08/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,780	Applicant(s) NAGAI ET AL.	
	Examiner Eva Montalvo	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/30/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-18, 29-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-10,17,18 and 29-37 is/are allowed.
- 6) ☒ Claim(s) 11-16,38 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action responds to the amendment filed on 04/30/2009.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claims 11-14, 16, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ignatius in view of Hahn (cited in previous action).

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Ignatius discloses a semiconductor light emitting device (see Figs. 1-4) comprising a light emitting element array (10) formed in such manner that a plurality of light emitting elements are connected in series.

Ignatius fails to disclose that each of the plurality of light emitting elements include a multilayer epitaxial structure including a first conductive layer, a second conductive layer, and a light emitting layer between the first conductive layer and the second conductive layer, a main surface of the second conductive layer which faces away from the light emitting layer being a light extraction surface; a first electrode formed on a main surface of the first conductive layer which faces away from the light emitting layer; and a second electrode formed on the main surface of the second conductive layer which faces away from the light emitting layer; where the multilayer epitaxial structure being formed on the metal layer in such a manner that the first conductive layer is closer to the metal layer than the second conductive layer is, the metal layer supporting the multilayer epitaxial structure, and conducting heat generated in the light emitting layer.

Nonetheless, these features are well known in the art and would have been an obvious modification of the device disclosed by Ignatius, as evidenced by Hahn.

Hahn discloses a semiconductor light emitting device (see Fig. 1 and [0028]) comprising a multilayer epitaxial structure (3) including a first conductive layer (5), a second conductive layer (4), and a light emitting layer (19) between the first conductive layer and the second conductive layer, a main surface of the second conductive layer which faces away from the light emitting layer being a light extraction surface; a first electrode (6) formed on a main surface of the first conductive layer which faces away from the light emitting layer; and a second electrode

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(7) formed on the main surface of the second conductive layer which faces away from the light emitting layer; where the multilayer epitaxial structure being formed on the metal layer (11) in such a manner that the first conductive layer is closer to the metal layer than the second conductive layer is, the metal layer supporting the multilayer epitaxial structure, and conducting heat generated in the light emitting layer (see Fig. 2).

Since Ignatius and Hahn are in the same field of endeavor, a person having ordinary skill in the art at the time of invention would have readily recognized the desirability and advantages of modifying Ignatius as suggested by Hahn, by employing a LED with a p-type layer on an electrically conductive layer. This would impress a current over the entire lateral cross section of the p-type layer, thus improve the device performance (see [0004]).

Ignatius further disclose that the first electrode (14d) and second electrode (14c) are positioned to each other in the same manner for each light emitting element (see Fig. 2); and a metal layer (18) on which the light emitting element array is formed, with an insulating layer therebybetween, in such a manner that the first electrode is positioned closer to the metal layer than the second electrode is, the metal layer connecting and support the multilayer epitaxial structures and conducting heat generated in the light emitting layer, wherein the metal layer is electrically divided into at least two portions; at least one of the portion (18a) is connected to the first electrode of a light emitting element at one end of the light emitting element array, to be constituted as a first power supply terminal, and at least one of a rest of the portions is connected to a second electrode of a light emitting element at the other end of the light emitting array, by means of a conductive member (24) which extends from the second electrode in a direction

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parallel to a main surface of a second conductive layer of the light emitting element, to be constituted as a second power supply terminal.

As to claims 12-14, and 16, Hahn discloses a device (see Fig. 2 and [0028]), where the metal layer is electrically divided into at least two portions, and at least one of the portions is constituted as the first power supply terminal, and at least one of a rest of the portions is connected to the second electrode, to be constituted as the second power supply terminal; the first electrode is formed on substantially the entire main surface of the first conductive layer which faces away from the light emitting layer, and reflects light emitted from the light emitting layer; the second electrode is a transparent electrode which transmits the light emitted from the light emitting layer; and the second electrode is formed on substantially the entire main surface of the second conductive layer which faces away from the light emitting layer; and each of the first conductive layer, the light emitting layer, and the second conductive layer is made of a compound semiconductor including nitrogen.

As to claims 38 and 39, Ignatius discloses a device comprising a printed wiring board (42) including a bonding pad; and a semiconductor light emitting device as defined in claim 11, the semiconductor light emitting device being mounted on the printed circuit board by connected a metal layer including in the semiconductor light emitting device to the bonding pad; and a light apparatus comprising a light emitting module as defined in claim 38 (see Figs. 1-6 and col. 5, lines 13-18).

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ignatius in view of Hahn as applied in claim 11, and further in view of Mueller.

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Although the device disclosed by Ignatius in view of Hahn shows substantial features of the claimed invention, it fails to expressly teach a device, where a phosphor layer formed on the multilayer epitaxial structure so as to cover the main surface of the second conductive layer which faces away from the light emitting layer, the phosphor layer including a light emitting substance which is excited by the light emitted from the light emitting layer, to emit light.

Nonetheless, these features are well known in the art and would have been an obvious modification of the device disclosed by Ignatius in view of Hahn, as evidenced by Mueller.

Mueller discloses a device, where a phosphor layer (22) formed on the multilayer epitaxial structure (2) so as to cover the main surface of the second conductive layer (4) which faces away from the light emitting layer (5), the phosphor layer including a light emitting substance which is excited by the light emitted from the light emitting layer, to emit light (see Figs. 1 and 2, and col. 5, lines 5-40).

Since Ignatius, Hahn and Mueller are in the same field of endeavor, a person having ordinary skill in the art at the time of invention would have readily recognized the desirability and advantages of modifying Hahn, as suggested by Mueller, by employing a phosphor layer over the multilayer epitaxial structure. This phosphor layer would absorb selected wavelengths of light emitted by the multilayer epitaxial structure and emit light in the desired wavelengths to produce a brighter or purer color of light (see col. 5, lines 16-40).

Response to Arguments

Applicant's arguments filed 4/30/2009 have been fully considered but they are not persuasive.

Applicant argues:

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Claim 11 basically also as amended is inclusive of the indicated allowed subject matter of Claim 1 and Claim 3. It is respectfully submitted that Claim 11 and its dependent Claims 13-16, 38 and 39 are also allowable.

Examiner's reply:

The argument is not persuasive. The amended limitations in claim 11, was not previously objected to, thus it does not place the independent claim 11 and its dependent claims in condition for allowance. Han clearly discloses a device, where the multilayer epitaxial structure being formed on the metal layer (11) in such a manner that the first conductive layer is closer to the metal layer than the second conductive layer is, the metal layer supporting the multiplayer epitaxial structure, and conducting heat generated in the light emitting layer (see Fig. 2).

Allowable Subject Matter

Claims 1, 2, 4-10, 17, 18, 29-37 are allowed, as the limitations in previously objected claim 3 is amended into the independent claim 1.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Montalvo whose telephone number is (571)270-3829. The examiner can normally be reached on Monday through Thursday 7:30-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marcos D. Pizarro-Crespo can be reached on (571)272-1716. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eva Montalvo
Patent Examiner
Art Unit 2814

/Wai-Sing Louie/
Primary Examiner, Art Unit 2814